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switch circuit includes an optical switch for switching optical signals based on the assigned wavelength to an optical fiber in the established flow path... Additionally, each hybrid switch circuit includes an electronic controller for monitoring traffic on the first dedicated wavelength and controlling the associated optical switch. *Once a flow path is established, data is transferred on an assigned wavelength between peripheral nodes on the core network. ...* (Emphasis added by Applicant)

Kirby further states, at column 6, lines 21-25:

"... Optical switch 205, on the other hand, is a slave device that directs data from optical inputs 230 to optical outputs 247 through flow paths based upon settings issued by optical switch control processor 210 rather than upon destination information encoded within the signals themselves. Routing an optical signal based on information within a given data packet is less efficient because the entire contents of such a data packet or optical signal must be stored and, after determining the destination of the signal based on information within the signal, the original signal and its contents must be re-created and transmitted to the appropriate destination..." (Emphasis added by Applicant)

It is clear, from reviewing the figures and specification of Kirby that Kirby describes a source routed system, wherein the path from a source to a destination node is determined at the source and propagated through the intermediate nodes to the destination using the dedicated channel T1 (232 in Figure 2). That is, a circuit is set up between the source and the destination. For example, Kirby describes, at column 7, lines 10-11 "...the dedicated wavelength T1 supports the setup of data transfers between two or more regional networks..." Kirby teaches against 'using destination information encoded within the signals themselves...' as 'inefficient', but rather dedicates a separate channel for control.

In contrast to Kirby, the claimed invention recites "...A network device comprising ... optical switching logic coupled between a plurality of input optical interfaces and a plurality of output optical interfaces, for selectively forwarding an optical data stream having a given wavelength *to either one of the optical interfaces for output on at least one optical fiber or to routing logic*; and wherein the routing logic is operably coupled to the switching logic to

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selectively receive the optical data stream from the optical switching logic and retrieve routing information from the optical data stream, wherein the routing information is used to dynamically control the forwarding of subsequent optical data streams *transmitted at the given wavelength through the optical switch logic* to one of the output optical interfaces on the at least one optical fiber...”

Thus, in the claimed invention, an optical data stream having a given wavelength may either be forwarded to the routing logic or forwarded through the switch. As described at page 3, lines 15-24 of the specification of Applicant's application, one advantage of such an arrangement is that “the optical switch router can pass through an optical data stream during one period of time and drop the optical data stream for local processing during another period of time. The optical switch router only needs to convert an optical data stream from optical form into electrical form during that period that the optical data stream is being dropped for local processing by the optical switch router.”

Such an arrangement is fundamentally different than that described in Kirby, which, as illustrated in Figure 2, dedicates a specific wavelength for routing and control information. In contrast, in the claimed invention, each wavelength can be used for carrying either control information or data, thereby making greater use of the bandwidth of the optical system. In addition, while Kirby's arrangement allows only source routing to be performed, the present invention, by providing a mechanism by which routing can be dynamically altered at each node, permits hop by hop routing protocols to be used. As described at page 7, lines 21-29 of Applicant's specification:

“... Dynamic configuration of the optical switching logic 210 can be accomplished using any of a variety of mechanisms. For one example, the optical switching logic 210 may be

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dynamically configured under control of the routing logic 240, particularly as network routes change pursuant to a routing protocol, such as Routing Information Protocol (RIP) or Open Shortest Path First (OSPF)....” The source routed system of Kirby does not have the ability to ‘dynamically control the forwarding of subsequent optical data streams’ as recited in the claims.

In order to support a rejection under 35 U.S.C. §102(e) *every* limitation of the claims must be shown or suggested in the prior art. For at least the reason that Kirby fails to describe or suggest several limitations of independent claim 1, including “selectively forwarding an optical data stream having a given wavelength to either one of the optical interfaces for output on at least one optical fiber or to routing logic...” and retrieving “... routing information from the optical data stream, wherein the routing information is used to dynamically control the forwarding of subsequent the optical data stream streams transmitted at the given wavelength through the optical switch logic...” Claim 1 is patentably distinct over Kirby, and the rejection should be withdrawn.

Independent claims 18 and 35 include limitations similar to those that differentiate claim 1 over Kirby, and for at least this reason, those claims are also patentably distinct over Kirby, and the rejection should be withdrawn. Dependent claims 2-17, 19-34 and 36-49 are dependent claim sets which server to add further distinctive limitations to their respective parent claims 1, 18 and 35, but are allowable for at least the reason put forth above with regard to their parent claims.

Rejections under 35 U.S.C. §103

Claims 6, 12, 23, 29 and 35-52 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kirby. The Examiner stated, at page 7 of the office action:

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“... Regarding claims 6 and 23, Kirby discloses a system as discussed above with regard to claims 1-3 and 18-20 respectively, above but does not specifically disclose that the optical switch comprises an optical drop-only fabric. However, it would have been obvious to a person of ordinary skill in the art to specifically have a drop-only fabric in the system of Kirby simply as engineering design choice to save costs and reduce complexity if users at that switching location in the system only wished to receive signals from the optical switch and did not require adding/transmitting them from the electrical domain...”

In order to support a rejection under 35 U.S.C. §103, a motivation for the modification suggested by the Examiner should be shown or suggested in the references or existing art. In addition, such motivation cannot contradict the teachings of the modified reference. Kirby explicitly states that ‘The preferred embodiment of the present invention involves routing information between regional networks, wherein a core network 100 of HEOS components collectively provide high speed routing of data traffic from one regional network 120 to another...” (Column 4, lines 57-58). Because it is Kirby’s intention that his invention be used as an intermediate node (which is also clear from the overall architecture of Kirby), Applicant’s disagree that Kirby would be motivated to use drop-only fabric, and thus allege that the rejection under 35 U.S.C. §103 for claim 6 is not properly based and should be withdrawn.

However, even if a motivation could be found in Kirby for the various modifications suggested by the Examiner, the modified teachings still do not overcome the inadequacies of Kirby described above with regard to the independent claims 1, 18 and 35. For at least this reason, claims 6, 12, 23, 29 and 35-49 are patentable over Kirby, and the rejection should be withdrawn.

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Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Lindsay G. McGuinness, Applicants' Attorney at 978-264-6664 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

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Date

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